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VOL. XIII, NO. 10. MAY 11, 1916

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

SCIENCE AND EPISTEMOLOGY

SINCE the birth of epistemology, science has found little support in philosophy for the affirmed existence of objective truth. By objective truth we commonly denote, as I understand it, a truth in the production of which the psychophysical individual is in no way involved. But epistemology, grounded as it is in psychology, has in this very fact made the existence of an objective truth for epistemology a sheer contradiction. Its sensationalistic principle has been turned and twisted in many a way, since the days of Berkeley, to surmount the limitation. But with a clear knowledge of what is implied by objective truth, ought we not frankly to admit that a *proof* of an objective truth from the standpoint of epistemology is one that has not yet made its appearance upon the evidence of facts that are at once clear and convincing?

The situation is a curious one. There is no truth, says the epistemologist, in the existence of which the psychophysical individual fails to be effectively involved. The physical scientists, on the contrary, have as persistently subscribed to an order of truth from the production of which the psychophysical individual stands excluded. By the aid of some obvious facts, hitherto overlooked, I think I have achieved the solution of this conflict along lines calculated to appeal to scientists and epistemologists alike.

My argument will rest upon the truth of several principles extracted from the field of science. The principles are those (*a*) of general dependence and (*b*) of uniform behavior in nature, which, taken together, yield a revised form of relativity. Under the term "pluralism," I shall embrace such additional principles from the methods of science as (*c*) disconnections and (*d*) ultimate differences or heterogeneity. As these principles in this conjunction have already been given a full elaboration by me in a series of publications, I shall, after a brief and more completely organized statement of them, confine my attention in this paper to an exposition of the thesis that the psychophysical individual is *not* involved at every point in the determination of reality.

I

Relativity and pluralism are so closely bound up with each other that I shall not, in a statement confessedly abridged, deal with them separately.

The idea most central to relativity is that of dependence. But the idea of relativity involves other specific ideas as well. The fault with philosophy in large measure is a matter of oversight in the correlation of these ideas. But how are we to set about supplying the deficiencies? There is but one way open to us. In the first place, it remains for us to note whether, and if so where, relativity has been given a constructive scope; particularly as the scope granted to it in the past by philosophy has been mainly destructive. In the second place, attention should be directed to a complete analysis of relativity when in its constructive operation.

The first inquiry may be satisfied at once: relativity is the most central idea involved in the methods and in the results of science. A conscious identification of relativity (as it existed in philosophy) with the scientific principles of general dependence marks, accordingly, the first radical step that has been taken in the solution of the problem, and, since my initial[1] presentation of the matter, has been apparently adopted in several quarters. In philosophy the notion of relativity without an exception presented a very abridged conception. Is it any wonder, then, that the scope of its operation in philosophy should have remained of a doubtful value? On the contrary, if we accept the method and the results of science, we must admit that science can not take a single step which does not involve the principle of relativity. It must, therefore, be the principle *par excellence* in the determination of truth.

In answer to the second inquiry, it may be stated in advance of an analysis, that the correlated ideas of which philosophy, unlike science, failed to give regard *in their specific bearing upon relativity* are, (*a*) uniform action in the behavior of objects, and (*b*) pluralism, as involving disconnections and heterogeneity.

That dependence is a principle fundamental to all science, may be accepted, I dare say, without dispute. Offer science any object or event and science at once sets about to lay bare the relevant conditions (objects) involved in the existence of the presented object or event. But the fact to be emphasized is not merely *dependence,* but *relevant* dependence. Hence, with science, a given fact is not dependent upon *all* other facts, but only upon *some* other facts. In regard to other so-called irrelevant facts, the given object is affirmed to be *in*dependent. Relativity in its philosophical formulation, however, has failed to embody such irrelevancy or disconnections with the idea of dependence, although in science the existence of disconnections, as is evident, is as essential in the discovery of truth as the existence of dependence. These two principles, in science, are coequal in function; and if coequal in function, they are coequal in metaphysical rank. Philosophy, therefore, no matter what its speculative tendency may be, is denied the right to relegate either disconnections (independence) or connections (dependence) to the background. To divorce them, or to exalt the one to the exclusion of the other as metaphysically more ultimate, is to forget, for example, that a disconnection between two objects in chemistry remains a disconnection *in chemistry* even though other kinds of relations may be established between such chemically disconnected objects. In addition to these chemical disconnections, each of the extra-chemical relations in turn would have its own specific quota of disconnections. Empirically considered, therefore, pluralism in the form of disconnections presents an ultimate phase of reality, one that is incapable of transcendence,[2] however varied or numerous the connections may be that are elicited in our investigation of any part of reality. At the same time, it is to be affirmed that connections are equally fundamental to reality. We infer the existence of connections whenever change manifests itself in a specific group of objects brought into an effective conjunction.[3] Accordingly, it is with the recognized existence of a *change* of one type or another that the various causal sciences originate. Thus a chemical change *versus* a mechanical one, when accepted as a certain type of result, gives us the *basis* for an organization among one type of objects (chemistry); the distinction between the beautiful and the ugly, another form of a recognizable result, yields another basis for an organization of our objects (esthetics); and so on indefinitely as we pass from one basis or general distinction in human experience to another, whether practical or theoretical. *The point of departure in each case is the accepted result,*[4] *whether simple or complex.* The result in turn determines the measure and boundary of the objects constituting its conditions and, like the result, these may be either simple or complex. Accordingly, when I make lemonade I do not combine elements that are simple from the standpoint of chemistry, but I combine the complex thing, water, with the complex things, sugar and lemon juice. From the standpoint of lemonade, they are ultimate.[5] On the other hand, the so-called elementary substances (hydrogen and oxygen) are ultimate in reference to their capacity to produce water, just as the electrons may be ultimate in respect to their peculiar capacity to produce other specific results. The *conditioning* objects in each case are ultimate in their determination by virtue of the fact that a restricted and special set of conditions is peculiarly requisite for the production of a certain specific result; and the *resulting* object is ultimate in its determination, (*a*) for the reason that it may function as a condition in some other context of human experience; or (*b*) for the reason that it is relatively unique and incommensurable[6] (heterogeneous). In this account, the principles found to be unfailingly present with the principle of dependence or connection are: (1) uniformity in the operation of objects; (2) disconnections; and (3) heterogeneity. I shall deal with these three additional principles in greater detail.

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[1] "Locke a Constructive Relativist."

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[2] To have recourse to a trans-empirical principle to enforce an ultimate unity is without avail; for in a sphere of fanciful speculation the conclusion that pluralism is ultimate is in no way a less valid assumption than the opposite assumption of an absolute unity or homogeneity. I, however, deny to philosophers the rightful abandonment of the methods and the results of science for dreams, unless a competition at the outset with Grimm and Andersen is also openly declared on the part of a philosopher.

[3] By making *change* the distinguishing mark between a causal and a noncausal situation, it is made possible to invest the word "relation" with a more specific meaning, and to offer a proof for an *objective causation.* See this JOURNAL, Vol. XI., page 655, for a fuller elaboration of this contention.

[4] And the point of departure, except possibly for psychology, is not the psychological immediacy, whatever the form in which it has been so commonly proclaimed.

period.

Under the principle of uniformity, science embraces two ideas: (*a*) that a specific set of conditions will produce a specific result, and (*b*) that this operation remains constant. *Why* phenomena should behave thus, philosophy, since Hume, makes no attempt to answer; *that* phenomena behave thus is a matter of empirical observation, although recent discussion by anti-intellectualists has rudely questioned the truth of it. In the interest of the present discussion, this challenge may be passed over.

When relativity, therefore, upon the basis of uniformity, suggests the claim that a given object reveals itself differently under different conditions, two things are of necessity implied: (1) that such operation in objects represents what is ultimate and objective, and (2) that the object under consideration is of necessity a synthesis or so-called construct. Upon such ground it is easy to understand that a given object under differing conditions may combine even incompatible qualities. For instance, it is compatible with our notion of gold for it to possess a host of incompatible qualities and properties—a solid or a liquid state; red, green, or yellow; and it may, under different forms, at once have the ability and the inability to combine with an indefinite number of other substances. Each of these qualities and properties, however, in accord with the principle of uniformity, is actually present only in a specific, circumscribed situation or group of conditions. The problem thus forced to the front in the specific determination of objects, as I have already stated in full elsewhere,[7] is the one-and-the-many problem. The inherent perplexity of this problem is well known. Hence I may assume that one of the significant contributions to philosophy which this corrected form of relativity has to make is that it, by the aid of the principle of unformity, can yield the ground and proof of *a unity in objects that is objective*, whether we deal with an object of a single group of conditions or with an object that is constructed on the basis of many different groups. Thus gold, in the hand of the chemist, acquires a determination that is not only definite and specific, but as fixed in its determination as the principle of uniformity is fixed in its specific and invariable correlation of a specific result with its specific conditions. I do not, of course, claim for relativity on this point an unlimited capacity to illuminate; but I do claim for it the merit of doing for the one-and-the-many problem what no other principle has as yet succeeded in doing. Thus pragmatism, for example, has failed to meet this demand for unity in its use of such principles as "needs," "habits," "purpose," "satisfaction," "whatever works" as evasions of or as substitutions for the principle of uniformity,—terms not only subjective in their connotation, but they, in any properly organized form, are wholly within the control of the principle of uniform operation in objects. In so far, then, as relativity incorporates the idea of uniform operation in objects, it embodies a principle that is fixed, ultimate, and objective. Hence, to call uniformity itself into question, constitutes no special argument against relativity. The argument, if true, would overthrow every form of science.

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[5] This JOURNAL, Vol. XI., page 605. Hence, the realist in his assertion that complex things are or may be ultimate, from the presented standpoint, proves himself in possession of a bigger truth than he, left to his own reasoning, could have established. His error lies in his failure to perceive that one and the same object, under changing conditions, may either forfeit or acquire a unity, and hence, in its isolated abstraction, may be termed neither simple nor complex, one nor many.

[6] Thus, water, in respect to hydrogen and oxygen is heterogeneous. Moreover, water maintains a certain independence for the reason that it can not, except under very specific conditions, be reconverted into hydrogen and oxygen, and, only under still other specific conditions, converted into something else, as, for example, vapor or ice. Water, therefore, remains fixed in a specific determination until the relevant conditions capable of producing a change in it are supplied. This argument, accordingly, yields at least one proof for independence.

In the idea, "heterogeneity," another distinct aspect of relativity comes to the surface—an aspect of objects more properly described by the wider term of pluralism. I have already dwelt sufficiently upon one aspect of pluralism—the existence of disconnections among objects,—in virtue of which property objects may be termed "neutral" or "ineffective" in respect to other specific objects. One can not view without surprise the fact that this obvious commonplace of the methods of science should have escaped an appreciative understanding by philosophers expounding metaphysics.

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[7] This JOURNAL, Vol. XI., pages 603–07.

It is another aspect of pluralism, however, to which I wish here to draw attention; namely, that fundamental differences must be assumed to inhere in objects, in virtue of which fact alone we can maintain *differences* in *results* and *differences* in *conditions.* Hence deny ultimate differences (or heterogeneity) of objects and the scientific formula in question, with its possibility for an organization of objects, vanishes. An organization of objects, upon the basis of the formula in question, primarily implies a partiality; and a partiality among objects lacking in differences that are inherent and ultimate would be a partiality without either pith or meaning. General chemistry establishes such differences as ultimate in the case of eighty or more so-called elementary substances. Physical chemistry in the number of substances considered by it as ultimate far outstrips general chemistry. And recently, the new science of colloids, another department of chemistry, has fixed upon still other aspects of reality as ultimate. This science of colloids in particular comes with an unusual enlightenment for one wearied by the monisms of philosophy. But why pause to multiply instances of the above order! For, once clearly fix upon the fact that the point of departure in any organization of objects is a given, more or less, basic *result,* and one can easily understand why the three mentioned departments in chemistry fail to conflict with or to neutralize each other. It also serves to explain the further fact why the exponents of the sciences mentioned, as a unit, should further maintain, for example, that the theory of electrons emanating from physics in no way undermines or challenges their respective sciences. The truth is, in fact, that no matter of what order the distinction *is* that lies at the basis of a specific science, provided the distinction is real, the principles of dependence and of heterogeneity remain equally implied and assumed in all scientific explanation. For, if the distinctions at the base of each science were not of a heterogeneity that is ultimate, the distinction between one science and another would be a mere makeshift. But if the distinctions at the base of any science are ultimate, then the distinctions between each of the sciences are ultimate. The danger in dealing with a problem of this kind is that we are too apt to deal with it in the abstract. Instead, let us take such a trinity of closely related sciences as general chemistry, physical chemistry, and the science of colloids, and the fact at once disclosed is that the specific properties and qualities of objects that come into existence from the standpoint of one of these sciences *cease entirely to exist* when the same general substance is dealt with from the standpoint of either of the other two sciences. And the reason thereof is obvious: *specific* conditions are requisite for the existence of certain *specific* results. Hence, however questionable or uncertain the boundary lines may be between the three sciences in question, we do not *resolve* the one science into the other when we set about to embrace them under one term. We merely, perchance, *incorporate* them. For if we would avoid a loss of any quality or property distinctive of any one of them, it would be necessary to incorporate them in such a way that each would have its own specific groups of conditions preserved intact. But such an incorporation (in essence) would be a matter of mere addition or aggregation; it certainly would not, at bottom, be a matter of organization, that is, a unity of the type so familiar to speculative thought. The attempt, therefore, to *resolve* all of reality, let us say, into psychology (the offense of present-day epistemology) is just as blind and absurd as to resolve the whole of psychology into chemistry or physics, or all of the sciences, each with its own more or less unique and incommensurable basic distinction, into a supreme science, so-called philosophy. I shall proceed to prove that relativity, as formulated, is in a position to correct the generally accepted psychologized epistemology.

II

A little truth, observed or neglected, throws a big shadow in philosophy. It is my aim to show that a truth, hitherto unobserved, but with consequences no less significant, characterizes epistemology. Hypnotized as epistemology has been by the subject-object relation of psychology, it of necessity failed to take due note of the object-object relation; or, when epistemology chanced to take note of the latter relation, it construed the relation solely in terms of the results gleaned from the subject-object relation, as if the object-object relation had no special contributions of its own to offer. The outcome thereof is our psychologized epistemology.

A statement of a few simple facts, taken at random from chemistry, will suffice to establish my contention that *sensationalism, in whatever form, does not exhaust the cognitive elements utilized in the differentiation or determination of objects.* Kant has already shown that certain abstract ideas are thus implied in human experience. The distinctions that I shall insist upon, however, are not abstract in character, but, on the contrary, very definite and concrete. I accept Kant in this contribution to philosophy just as I, to a certain extent accept Berkeley in his formulation of perception and existence. The ideo-motor theory in the hands of pragmatists, I also accept; but I deny that the ideo-motor theory supplants Berkeley; it only serves to place the outcome of his philosophy upon a broader psychological basis than the more narrow sensationalism had already achieved. But one set of non-sensuous distinctions has escaped detection,—the distinctions that come to exist in objects in virtue of *a variety in their operations* when they are brought into some form of a causal or non-causal relation with each other. To record such differences, as we shall see, is the central business of chemistry.

As stated in the pages preceding, reality for science is determined in circumscribed situations, in so far as we hold (*a*) to the formula that a given result is a product of specific conditions, and (b) to the principle of elimination as it is involved in all inductive reasoning. Opposed to this formula, epistemology asserts that the psychophysical individual is a factor that is not only constant, but also central in the determination of reality. Hence the question is at once raised: Is the psychophysical individual, as epistemology presents the matter, the one object that is immune to the "elimination" in question? I shall deal with the problem in the concrete.

I turn to the chemist and ask a simple question: Water is the product of what objects? He replies that hydrogen and oxygen in certain proportions, when united by an electric spark, produce water. He also informs me that when nitrogen is combined with oxygen, water will not result; nor will any other substance when combined with any other substance (except H_2O) succeed in producing water. Now grant that a psychophysical agent is present in each and every one of these situations. But how can its presence alter the matter? For the thing primarily concerning the chemist *in reference to water,* is the question whether the psychophysical agent or whether some other principle, as oxygen, nitrogen, or silver, is directly involved in the origin of water. If the psychophysical agent, rather than oxygen or hydrogen, were the determining factor, it would follow that the psychophysical agent was upon a par, and merely upon a par, with the eighty or more elementary substances which chemistry enumerates as primary in its investigations. In this case our formula for water would be: "the individual $+ H_2O +$ the electric spark." On the other hand, the formula, "the individual $+$ nitrogen $+$ silver" would be incorrect. But if the psychophysical agent is an unchanging coefficient in the situations which *fail to produce* the result and also in those *competent to produce* the result, what possible reason would the chemist have for regarding it as the *solely* central and significant factor in the formation of water? The distinction here between what is significant and what is negligible in the situation is too obvious for even the dullest among the chemists to confound. *In respect to the origin of water,* hydrogen and nitrogen *are different* and the psychophysical agent *is neutral,* the facts are obvious. What, then, are we to say of a doctrine that affirms that the psychophysical agent is the primary and solely significant factor in the given situation? The psychophysical agent *in respect to the given result* is neutral, in the first place, for the reason that it is not "effectively" involved in the production of the specific result: and, in the second place, for the further reason that the *type of differences,* instanced by hydrogen and nitrogen in respect to water, *is of a strictly non-sensational order,* distinctions, both of them hitherto unregarded by epistemology. The chemist, therefore, would not have been justified in following the epistemologist in so patent an oversight of chemistry's own special problems and distinctions. Thus in a manner akin to his necessitated indifference to psychology and epistemology, the chemist is inclined to ignore a mere mechanical mixture as over against a chemical one; or again, he is inclined to ignore the shape and size of bodies as over against their merely substantive character. Accordingly, we find in every text-book in chemistry that the shape and size of objects are deliberately excluded from its field, on the strength of their irrelevancy to its specific subject-matter. Why, then, should not the chemist, upon even more established ground, have felt himself safe in excluding the boasted claims of epistemology? The failure of epistemology to investigate the object-object relation explains its incapacity to give proof and meaning to the notions of *independence* and of *non-sensational differences* in objects. It also explains the fact why the more or less objective principles and distinctions, for which chemistry in its turn most specifically stands, failed to receive a proper recognition in philosophy. The muddle thus induced by epistemologists in the sphere of chemistry, however, served less to confuse than to disgust the chemist with the arrogant claims of epistemology. The chemist's repudiation of epistemology now proves to have been a sound one. For when once the chemist has accepted a chemical change as a *type of change* that is distinctive, the only principles that he is validly called upon to recognize are (*a*) that a given so-called chemical result is the product of certain specific conditions. These conditions in turn become disentangled and organized. And in so far as he thus simultaneously adheres to his special type of change and to this principle, the only other principle to which he is called upon to adhere to is (*b*) that those conditions that are present when the phenomenon is present and absent when the phenomenon is absent are the solely central and significant conditions in the production of a given phenomenon. Generalizing, then, we may conclude that science is correct in its claim that the individual is not of necessity involved in the determination of all reality; and its claim remains correct to the extent in which science can find, and thus come to deal with, *objects whose interaction with each other is of more primary* *concern than their interaction with a psychophysical organism.* The physical sciences as a whole stand for the former type of interaction, and, in their results, they have come to exemplify principles that maintain *an independence of the psychophysical organism in their operation.* Nor does the fact that a psychophysical organism is a factor that is present in each and every situation under investigation in any way supplant the distinction that hydrogen and nitrogen *act differently in respect to water,* and are therefore *significantly different,* not in color, weight, or some other sensational quality, but *in operation in respect to water.* The type of differences in question is, of course, revealed to us in consciousness, but it is not revealed in terms of the psychophysical. The whole issue centers in this distinction.

It is true that the elementary substances of chemistry may and do become identified and differentiated within principles that are obviously psychological (sensational) in character. But the other fact remains equally patent, that they acquire a further differentiation and organization in harmony with principles that are in no way to be classed as psychological. I have already sufficiently enlarged upon such non-sensuous principles in connection with independence *versus* dependence and in connection with the varying capacity in so-called different objects to aid in producing a given result, or to fail to thus operate. And, what is more, the existence of such non-sensuous principles must be accepted, until we become able, if ever, to tell in psychological terms *why* hydrogen and oxygen in certain proportions will produce water and *why* other objects fail to do so.[8] All we are permitted to say is that hydrogen and oxygen will produce water; oxygen combined with nitrogen will not do so. Here, then, as clearly indicated, *are differences in the operation of objects* which we, as philosophers, ought not to have overlooked. The oversight is all the more puzzling, because the distinctions concerned are so very simple and obvious in their statement, and, at the same time, so central in a science no less eminently concrete than chemistry. In their contrast to psychological principles, the chemist has been led to call them objective. Let the psychologist dispute him if he can or, out of his possible psychological resources, provide for this oversight of the past.

Naturally, every observed object, as stated, involves cognition. But my contention is that a distinction may be affirmed within cognition between psychological and non-psychological elements or principles of knowledge. This, of course, could not be the case if cognition were not affirmed to be at once distinct from and in part at least *in*-dependent of mere sensational data. My present proof for non-sensational elements of knowledge, observe, does not, however, pause with this more or less deductive type of reasoning. I merely make a demand for an observation of the fact that a psychophysical organism is ''neutral'' in its capacity to act on a par with the elementary substances in chemistry to produce a *chemical* change, and, secondly, that the psychophysical organism is unable to yield the elements for the differences affirmed to exist between the chemical substances in their reciprocal operations. For these reasons I have been led to assert that the psychophysical organism is like every other object in the universe; that is, it is at once ''effective'' in respect to some results and ''neutral'' in respect to others. And it is upon this distinction in the human organism as ''neutral'' and as ''effective'' in its relations to different objects, that I would justify the claim of chemistry to eliminate psychology from its cognizance. Cognition or awareness, therefore, has a wider scope than is provided for by the historical development of epistemology. In fact, for the very same reason that philosophy turned to psychology to prove a dependence of certain elements in cognition upon an organism, it should also have turned to other sciences for the proof of elements in cognition not thus psychologically dependent. This I now claim to have opened the way to do. Until we can give in terms of sensations *why* hydrogen and nitrogen are different in respect to water and yet treat them as different, as we do in chemistry, then we must stand ready to admit either that chemistry presents no valid form of knowledge, or that non-sensational elements in the differentiation of objects exist in cognition.

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[8] Do not mistake my contention. The chemist does not attempt to say *why* objects manifest the differences indicated. He is merely interested in the result that objects, identified by him as different, do *operate* differently, and to tabulate these *differences in operation* practically exhausts his interest.

In a similar manner, it can be shown that a *chemical* change distinguishes itself from a merely *mechanical* change by the help of non-sensational rather than sensational principles. Both kinds of change, no doubt, involve the presence of sensational elements; but a *further* differentiation is affirmed to exist between them, and this further differentiation is one that is based upon a difference in objects more properly denoted as functional than structural (substantive) in character. Had chemistry affirmed that the distinction between a mechanical and a chemical change was one that at bottom is metaphysical, the chemist would, without more ado, have put his science at the mercy of philosophy. But chemistry, fortunately, did not thus easily abandon its sphere. Hence, the first distinction that chemistry is actually found to make between a chemical and a mechanical change is that the latter is essentially reversible (as he terms it) whereas the former is not; secondly, that the former involves more heat energy than the latter. Thus we see that even in his definition of change, a chemist's interest in objects lies primarily in their functional aspect. He accepts the distinctions that he thus makes as final and reliable. After that his sole business is to separate those objects that combine (in accord with the principle of uniformity) in the one way from those that combine in the other way, or in neither way. A psychical change might thus be taken as representative of a type of change neither chemical nor mechanical.

If now we raise the question whether a psychical or a chemical change is the more ultimate, the conflict between monism and pluralism would at once confront us. Without seeking to reopen this issue, all that remains to say is that a psychical event to all purposes is as unique and as distinct an event as a chemical or mechanical one, and, hence, may as validly serve as a basis for a science. It is not surprising, therefore, that certain sciences have arisen in which the attainment of truth has for its prescribed ideal the inclusion of just that psychophysical element which the ideal of the physical sciences seeks to eliminate. Psychology, ethics, esthetics may be cited as some of the sciences falling within the sphere of this latter ideal. Their subject-matter may be subjective, but if expressed in terms of the uniform behavior of objects, the truth achieved is objective. In current usage, however, some truth only is objective and some subjective. Truth, by common agreement, is subjective to the extent in which a psychophysical individual, as an "effective" object, obviously contributes[9] in the production of sense phenomena; but in so far as the individual is not an "effective" condition in a specific production, but a medium of transcription only, to that extent, by common agreement, truth is objective and not subjective. Instead of this definition of objectivity, I would offer the principle of uniform behavior in objects as formulated. Secondly, science has been led to subscribe to the existence of a truth, in the production of which the human organism fails to be "effectively" involved. That such situations exist, is the long-standing claim of the physical sciences; but science has been unable to justify its claim in the face of the contention, advanced by philosophy, that the individual is directly involved in each and every observed situation. Neither has philosophy been able to justify its claim in the face of the methods and the results of science. Both science and philosophy are thus found to be lacking; and their lack is due to the fact that they alike fail to distinguish, and to give the ground for the distinction, between an individual that is "effective" in certain situations and "neutral"

[9] I use the word "contribute," for the reason that every "cause," in my judgment, is *plural* and not *one*, as set forth in my paper on "Causation" in this JOURNAL, Vol. XI., page 655.

in others. The proof thereof demands the acceptance of relativity and pluralism at every point.

III

One objection to the position herein advanced may be met at once. Grant that non-sensational principles of knowledge exist, how avoid subjectivity in knowledge from the standpoint of thought as constitutive,—the claim of so-called objective idealists.

This objection is to be overcome by a purely empirical procedure. The question at issue is: Is every object in its apprehension transformed by thought? This claim, to my mind, stands refuted if we can again empirically show that thought is a principle that is controlled as well as one that controls in our conception of reality. A mere outline of my argument must again suffice.

Suppose we ask the question whether water is simple or complex, one or many. To answer this question we must turn to something else than water. It is "one" from the standpoint of lemonade; "many" from the standpoint of physics or chemistry. If so, it is not left to thought upon its own initiative to apprehend water as either one or many. On the other hand, thought is constrained by an inexplicable behavior among objects, to denominate water as "one" in relation to lemonade and "many" in reference to hydrogen and oxygen.[10] Hence thought is controlled.

Or again: suppose I hold that nitrogen and silver will produce water. How would you expose my error? Merely by challenging me to make my statement good; that is, to produce water from nitrogen and silver. This, of course, I can not do; but water can be produced by the help of hydrogen and oxygen. If so, where does the principle of control lie in the formation of a correct idea in respect to the origin of water? Does it lie in thought as ultimate or in the inexplicable but uniform behavior of objects? And since my aim in passing is merely to suggest to what extent thought is *not* constitutive, this division of my paper may be brought to a close.

The path is now open for grappling successfully with the appearance-reality problem of historic thought.

IV

If reality is assumed to be inherently pluralistic and relativistic, then it follows that reality reveals itself in circumscribed situations only. And since *time* and *varied situations* are alike required in the manifestations of reality, no matter what bit of it we seize upon, then one sample of it, as the product of one situation only or of a series of different situations, is no more real in the abstract than another, or, to state the matter in positive terms, it is just as real. We have no block-universe for our standard. Our only standard is the one that is found in the correlation of a specific result with its specific conditions. The block-universe conception is thus not only superseded as a standard for the attainment of truth, but it is refuted by reality's inherent plurality. It is further refuted by the fact that *time* and *different* situations are required to manifest all the qualities and properties of even the simplest parts of reality. Hence the more complex the reality that is assumed, the more persistently the principle applies, that time and different situations are absolutely necessary for manifesting all its various properties and qualities.

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[10] Hence a so-called "result" would control so-called "purpose." To this extent, therefore, do I venture to correct and supplement much of our current philosophy, particularly pragmatism.

Now, if reality manifests itself in circumscribed situations, why should that product of reality of which the psychophysical individual constitutes a *productive* part, be called an "appearance," and those circumscribed parts of reality that are determined independent of an "effective" psychophysical individual, genuine reality? There is no basis for such a contention, except the false one that the universe and every object in it exist in their isolated abstraction with a prefixed measure and boundary, and that the psychophysical individual, accordingly, is a sheer epiphenomenon as far as his part is concerned in the constitution of that universe. But once admit, as I have tried to establish, (1) that reality at large is not such a prefixed block-universe; (2) that it manifests itself in circumscribed situations only; (3) that the individual as "effective" and "neutral" is but one object among others, and hence as much as any other object an integral part of such universe; and (4) that the contributions made by a psychophysical organism in an object's constitution is of the same general order as the contributions from any other object,—then the appearance-reality distinction as metaphysical, the most persistent delusion of historic thought, vanishes forever, except the distinction be retained for practical reasons.

In fact the appearance-reality distinction, when considered in the light of the relativity herein formulated, converts itself into a thing the very opposite of that claimed for it in our historic development of thought. For if that reality, in which man is more directly involved, is more real for him than a more independent form of it, then the supposed "appearance" of historic thought converts itself into the superior reality, and the supposed "reality" into the inferior.

The conclusions that follow are that civilization with its organized reality is for us of a richer content than less organized reality; and secondly, that the world, as well as the individual, is inherently creative and destructive.

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